

REMARKS

Claims 17-24 and 29, 31, 33, 34, 36-38 are pending in the application upon entry of the amendments. Independent claims 17, 21 and 33 have been amended for consistency and to better describe certain aspects of the invention. Moreover, claim 17 incorporates features on subject matter set forth in previous dependent claim 30. Claim 21 incorporates features on subject matter set forth in previous dependent claims 25 and 32. Claim 33 incorporates features on subject matter set forth in previous dependent claims 35 and 39.

Claims 25, 30, 32, 35, and 39 have been canceled without prejudice. The subject matter of claim 30 is incorporated into independent claim 17. The subject matter of claims 25 and 32 are incorporated into independent claim 21. The subject matter of claims 35 and 39 are incorporated into independent claim 33.

Since the amendments place the application in condition for allowance, remove issues in the event of an appeal, and/or do not require further searching, entry is respectfully requested. Favorable reconsideration in light of the amendments and the remarks which follow is respectfully requested.

The Obviousness Rejection

Claims 17-25 and 29-39 stand rejected under 35 U.S.C §103(a) over Romanenko et al (WO 01/087798) and equivalent Romanenko et al (EP 1205241).

It is respectfully submitted that the rejection of claims 17-25 and 29-39 should be withdrawn for at least the following reasons:

Independent claims 17, 21, and 33 require a method of purifying a crude carboxylic aromatic acid involve an extruded carbonaceous material having pore sets of defined sizes and a specific metal catalyst. The Examiner contends that having a second set of pores having a diameter of at minimum about 5,000 Å and at most about 20,000 Å does not impart patent ability because such values

would have been determined by one having ordinary skill in the art. However, the Examiner provides no explanation and cited art to support that such a person would incorporate a second set of pores into a catalytic composite, for use in a method of purifying a crude polycarboxylic aromatic acid composition. Hence, it is respectfully requested that the Examiner provide art and reasoning in support of the contention of obviousness.

Independent claim 17 embodies method of purifying a crude polycarboxylic aromatic acid composition via an extruded activated carbonaceous support material comprising two sets of pores of defined sizes, and palladium. The first set of pores have a pore diameter of at minimum about 40 Å and at most about 100 Å, and the second set of pores having a pore diameter of at minimum about 5,000 Å and at most about 20,000. The Examiner does NOT cite any art that discloses or suggests a extruded activated carbonaceous support material with pore sizes between at minimum about 5,000 Å and at most about 20,000; for the purpose of purifying a crude polycarboxylic aromatic acid composition. Hence, it is respectfully requested that the rejection of claim 17 be withdrawn.

Independent claim 21 requires that at minimum about 40% of total Hg porosity occurs in pores having a diameter of 200 Å or larger, or at minimum about 34% of total Hg porosity occurs in pores having a diameter of about 5,000 Å and larger in the extruded activated carbonaceous material. The Examiner asserts a unsupported conclusory statement that "in pores having a diameter of about 5,000 Å....the percent of the total Hg porosity in the granulation process of making porous carbon material is well understood by those with skill in the art to be a result effective variable, especially when attempting to control the selectivity of the catalytic process." (page 6, ¶ 2). There is no reasonable basis for this assertion for two reasons.

The first problem is that neither the present application nor Romanenko disclose a method or process for "making" a porous carbonaceous material.

Rather, Romanenko discloses the use of several commonly available granulated carbonaceous materials (page 4, lines 15-18) that possess characteristics amenable for producing a mono- or bimetallic catalytic composition, by combining such carbonaceous material and a metal or combination of metals, for the purpose of purifying terephthalic acid. In contrast, the present claims embody a structurally distinct extruded activated carbonaceous catalyst support that has defined pore structures (page 3, lines 24-26) NOT disclosed or suggest in the cited art. This feature significantly improves the functionality and longevity of a catalytic composite in a substantially improved method for purifying crude polycarboxylic aromatic acid composition. Hence, it is respectfully requested that the rejection of claim 21 be withdrawn.

As evident by the existence of non-carbonaceous catalyst supports (e.g. alumina, silica, etc.), those skilled in the art may have realized some limits of conventional catalytic composites. However, Romanenko does NOT disclose nor suggest that one skilled in the art would have been motivated to create a distinct carbonaceous support. Such feature is distinct because its structure allows catalytic metals to be attached away from the exterior edges of the support. Such structure is also distinct in that it minimizes mechanical attrition while retaining corrosion resistance in an improved method of purifying a crude polycarboxylic aromatic acid composition. Moreover, the featured structural distinctions provide for a more efficient method of purifying an aromatic acid by decreasing mass transfer resistance, lowering risk of carbon contamination from breakage, and by requiring lower catalytic input while increasing the degree of purity of terephthalic acid product (page 2, lines 16-26).

The second problem with the assertion is that the Hg porosity that occurs in pores having a diameter of about 5000 Å is NOT well understood by those with skill in the art to be a result effective variable when attempting to control the selectivity of the catalytic process. Rather, Romanenko discloses that the selectivity of the purification process is dependent upon the combination and quantity of metal catalysts employed with a particular carbon material (see

Tables 2-6). The invention of the present application differs in that it contains a second set of defined pores. A person having ordinary skill in the art would NOT consider the percent Hg porosity in carbon materials having pores of about 5000 Å to effect the selectivity of a catalytic process. Moreover, Romanenko fails to teach or suggest that a carbon material contains pores of at minimum about 5000 Å. Among the carbon materials disclosed by Romanenko, none have a pore size outside of the range from 40 Å to 400 Å. Having at least a second set of defined pore structures between about 5,000 Å and 20,000 Å is a unique and necessary feature of the present invention. **The claimed mesoporosity reduces problems that arise from using pore sizes outside of the claimed ranges;** including possible mal-distribution of liquid or gas flows in a catalytic reactor bed, the requirement of locating all active catalytic metals at the exterior surfaces of the carbonaceous supports (page 2, lines 4-15), and NOT the selectivity of the process.

Therefore, contrary to the Examiner's assertion, a person having ordinary skill in the art at the time would NOT have considered the percent of Hg porosity that occurs in pores of about 5,000 Å in diameter to be a result effective variable, especially in attempting to control the selectivity of the catalytic process during the purification of terephthalic acid. It is respectfully submitted that this rejection be withdrawn and the subject claims allowed.

The Examiner finally contends that the term "about" in the claimed phrase of "about 5,000 Å" may imply that it can be interpreted as the pore diameter having more or less than a 5,000 Å diameter. Furthermore, the Examiner claims that it is reasonable to assume that the volume of pores disclosed in Romanenko can be within the claimed one. Independent claim 17 of the present application requires that the pore size of an extruded activated carbonaceous material for a catalytic composite comprises "a first set of pores having a pore diameter of at minimum about 40 Å and at most about 100 Å", and "a second set of pores having a pore diameter of at minimum about 5,000 Å and at most about 20,000 Å". Although use of the term "about 5,000 Å" to describe the minimum diameter

of a pore can be interpreted to mean that the pore diameter is more or less than 5,000 Å, it is NOT reasonable to assume that the volume of pores in the cited art can be within the claimed one.

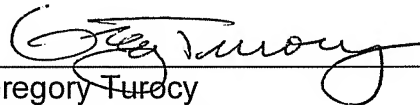
In *Ortho-McNeil Pharmaceutical v. Caraco Pharmaceutical Laboratories*, 476 F.3d 1321, the court held that the term “about” means “approximately” and held that a ratio of “about 1:5” meant approximately 1:3.6 to 1:7.1 under the circumstances of the case, a maximum difference of 42%. At issue, Romanenko only discloses pore diameters in the range from 40 Å to 400 Å (page 3, line 43), or at least 1250% less than “about” 5,000 Å claimed here. Since the maximum pore diameter disclosed by Romanenko (400 Å) is greater than an order of magnitude less than the minimum value described in the present application, it is NOT reasonable for the person having ordinary skill in the art to construe “about” 5,000 Å to mean 400 Å, or smaller diameters within the range of 40 Å to 400 Å. Moreover, the discrepancy between volumes would be even more dramatic as pore volume is a function of the pore area, and the area of a pore (approximately a circle) would be expected to increase about 4-fold for every doubling of the radius.

Therefore, to serve their purpose, words/numbers must be given their proper and ordinary meaning. It is absurd on its face to contend that a pore having “about” a 5,000 Å diameter is equivalent to pore with a 400 Å diameter. Therefore, in light of the aforementioned remarks it is respectfully requested that the obvious rejections be withdrawn.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution; the Examiner is invited to contact applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,
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